1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

526 staff play. The object of the game is to see which can keep up longest the continual strain upon the muscles of the arm, and ultimately strike the staff from the hand of the other."

HYGIENE: DISEASES AND THEIR CURE

515 Most of the Indians keep themselves very clean and take a bath twice a day in the river adjoining their settlement. As they wear but little clothes this is a very simple operation with them; they keep their body cleaner than do the lower class of the Ladinos, or of the white race in Europe, where the clothes are frequently the main source of dirtiness.

514 When the Indian goes to stool he always takes to the water, drifting down the river until he comes to a secluded spot, where he can perform this operation in privacy. When finished he cleanses the body with water.

515 The presence of dogs and pigs in the huts is responsible for the great quantity of fleas to be found there. In spite of the great care devoted to the hair, the latter is frequently full of vermin, and it is not an uncommon occurrence to see at the villages rows of women picking off one another's lice and crushing the troublesome insects between the teeth—a most disgusting sight.

164 MALARIA.—A swelling of the spleen and anemia are common enough and are undoubtedly the result of malaria (M.: *wrih*; T.: *wars*, *warai*; P., U.: *yama*, *yamah*),[a] which is endemic in the lowlands, although rarely fatal. The transmitting agent of malaria is a mosquito of the genus *Anopheles*, which is very common.

751 For malarial fevers infusions from the bark of certain trees are administered, especially that of the copalchí (*Cinchona* sp.). Instead of sudorific bush medicine, quinine is also administered nowadays. The fever or lemon grass (*Andropogon nardus* L.) is also used for this purpose. The sudorific is followed by a steam bath. The stricken person is enveloped in tunu blankets, and water is thrown on some large heated stones placed at his feet; he then inhales the thick vapor or fumes produced thereby. This part of the treatment is excellent, for it induces perspiration; but as the patient is then taken to the riverside and forced to take a cold bath pneumonia is often the result.

Among the Sumu the patient is carried to one of the numerous hot springs (*daka*) which abound in their territory, and immersed therein, or he is buried up to the armpit in the hot sand at the edge of the pool.

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[a] These names were formerly used by both Miskito and Sumu as a general term for most other maladies, but nowadays the Miskito have adapted the word *sikaia* (Engl. "sickness") in the latter sense.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

pre-columbian origin. The disease was found to occur in 10 per cent of the population examined, some villages having more of the disease than others. Aside from discoloration of the skin no other symptoms could be found and it appeared to have little effect on the body economy of an individual. However, many persons were conscious of the discoloration, felt shy because of it and presumed themselves to be unclean. The disease was common in certain families and not in others though there seems to be no evidence for congenital transmission[99]. So far little or no treatment for the disease has taken place in this area.

Dysentery

If by dysentery we mean infectious diarrhea then this disease is not only prevalent in the tropics but it is associated by high morbidity and mortality. And since it is epidemic in quality it is bacterial in origin.* However it must not be forgotten that dysentery is a loose term denoting mainly a symptom complex. As such the disease can be caused by amoeba, by the ciliate *Balantidium coli*, by malaria (P. falciparum), by certain worms, and by *giardia*. The two most common types of dysentery are bacillary and amoebic and of these two the former is our primary concern.

Bacillary dysentery is common throughout the year in the Coco River basin but has its greatest epidemic quality during the beginning and end of the rainy seasons. The childhood mortality rate from the disease although not exact takes a toll of approximately ten per cent of the children afflicted by it. As far as could de determined with limited equipment the common etiological agent is *Shigella paradysenteriae Flexner*, an organism utilizing glucose, mannite, but not lactose or dulcite.

The disease occurs chiefly in the larger villages; in the smaller villages it may be rare or have never occured. This is of interest from an epidemiological point of view since in some of the isolated small villages the carrier or the source of the organism is not available. In the larger villages, an example of which is San Carlos, the disease may debilitate a third to one half the population. In our opinion, at San Carlos the disease may be traced to certain wretched latrines within the business section of the village. Some of the latrines have been erected at considerable cost; others are make-shift devices for the conveniences of their owners. Regardless of cost the screens because

[99] Mackie, T. T., Hunter, G. W. and Worth, C. B. A. Manual of tropical medicine. Philadelphia, 1945.

* Dysentery bacilli, Salmonella, Staphylococci, etc.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

of rain and humidity have eroded, the pit fills with water and the entire construction fills with flies. The dysentery epidemics at San Carlos usually begin about these latrines and extend to the periphery of the village.

Another contributing factor to the spread of dysentery is that in some areas well meaning visitors have encouraged the use of milk for children. In a territory devoid of refrigeration or adequate sterilization the use of milk should be derived from the mother's breast or directly from the cow's udder. On the other hand milk products such as cheese are less likely to be infected. Nevertheless, milk fluid serves as an excellent bacterial medium. Powdered milk might obviate such a hazard.

Drinking water in the larger villages may be considered a source of infection since water may be stored in containers not ideally suited for such a purpose or the water may be collected from the main river or other pools simply because the source is conveniently located.

The Indian customs are such as to depress the occurrence of dysentery. These customs are to drink water from clear running creeks (see map of San Carlos), and to perform their ablutions either in the large river or to dig holes for their excremata. If holes are dug in the bush they are immediately covered up after use. The Indian, unless educated otherwise, considers the communal use of a structure such as a collecting booth for feces and urine as an evil. It would thus appear that the invading culture (Spanish American) with its convenient latrine often in juxtaposition to the latrine, has furthered the dysentery problem.

Some of the latrines observed were of such a character that even the investigators used to the inconveniences of the bush felt repelled by the utterly uninviting stench and the great scatter of soiled paper throughout the establishment. Toilet paper, in many tropical areas of high humidity, offers itself as a remarkable medium for growth of molds which renders the paper useless. Latrines built by special sanitary engineers were misused, had eroded screens and were halt filled with water. During the dry season when they were erected they were presumed to be ideal and satisfactory in every way.

If the wretched latrine is to be used, the use insecticides and disinfectants must be encouraged, otherwise dysentery will be present. The authors of this report endeavored to encourage the Indian practice of waste disposal.

Amoebic dysentery exists as far as could be determined in from 2-5 per cent of the population. Stool examinations at Waspam, revealed that 7 per cent of the adults and 2 per cent of the children had